GRUNDIG

WORLD RECEIVER **YACHT BOY 400 PE**

NEED HELP?
CALL OUR SHORTWAVE HOTLINE

If, after reading this owner's manual, you need help learning to operate your YACHT BOY 400 PROFESSIONAL EDITION, call us toll free, Monday through Friday, 8:30 a.m. to 4:30 p.m., PST at:

1-800-872-2228 from the U.S.
1-800-637-1648 from Canada

OWNER'S RECORD

This model is the GRUNDIG YACHT BOY 400 PROFESSIONAL EDITION, herin after referred to as the YB400PE. The serial number is located on the sticker inside the battery compartment. Refer to this number whenever you call GRUNDIG regarding this product.

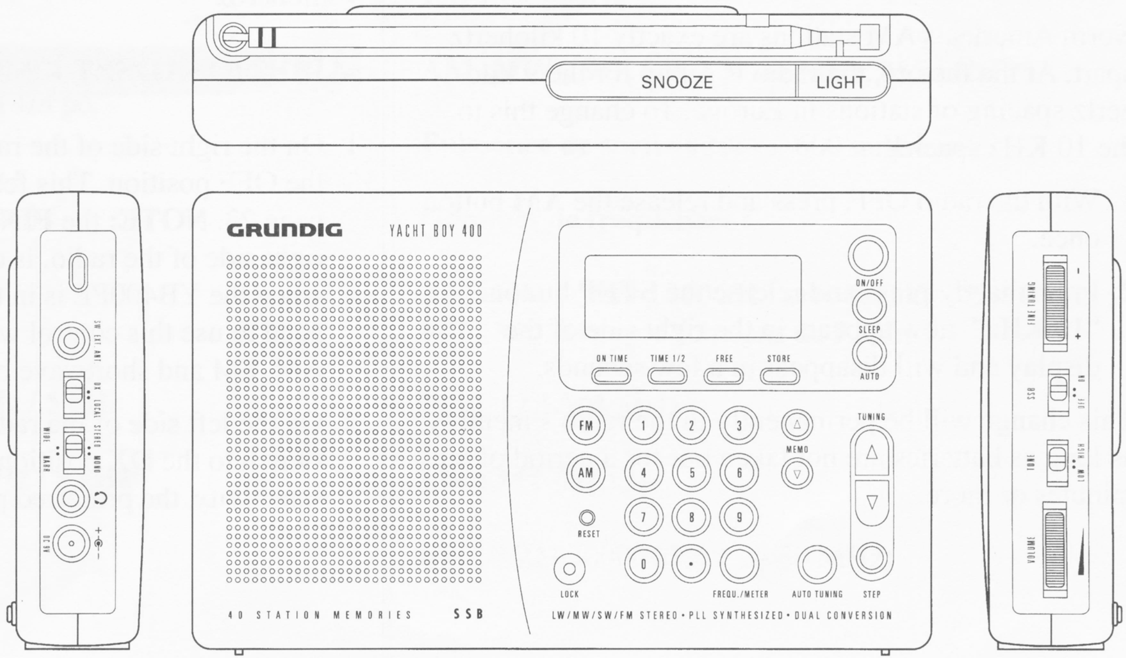
QUICK SETUP
(But please read the rest of the manual later!)

1. Insert batteries or connect the included AC adaptor.
2. Set the DX/LOCAL switch to DX (left side of radio).
3. Turn the SSB switch OFF (right side of radio).
4. Fully extend the telescopic antenna.
5. With the radio off, press and release the AM button once.
6. ***Immediately*** press and release the **STEP** button. "10KHz" now appears in the right side of the display, and will disappear in a few seconds. (See page 4 for more information about this procedure.
7. Turn the radio on by pressing the **ON/OFF** button.

SUBJECT	PAGE

What's included with the YB400PE?

- Owner's manual.
- Warranty card.
- A Grundig AC adaptor for use on 110-120 VAC outlets in the Americas.
- A 23 foot "reel" antenna for shortwave reception.
- Earphones.



IMPORTANT!
SET-UP FOR NORTH AMERICAN USE

North America's AM stations are exactly 10 kilohertz apart. At the factory, the radio is set up for the 9 kilohertz spacing of stations in Europe. To change this to the 190KHZ spacing:

1. With the radio OFF, press and release the AM button once.

2. Immediately press and release the STEP button. "10 KHz" now appears in the right side of the display and will disappear in a few seconds.

This change will be permanently in the radio's memory as long as batteries are not taken out for a period of ten minutes or more.

When traveling outside of the Americas, use the same procedure as above to set the spacing back to 9 kilohertz.

ADDITIONAL SET-UP INFORMATION

1. On the right side of the radio, set the SSB switch to the OFF position. This feature is described on page 23. NOTE: the FINE TUNING control, on the right side of the radio, is only activated and needed when the YB400PE is in the SSB mode. You do not need to use this control when listening to regular AM, FM, and shortwave broadcasts.

On the left side of the radio, set the DX/LOCAL switch to the DX position. DX allows for maximum sensitivity, the preferred position.

HOW TO INSTALL BATTERIES

Install six AA alkaline batteries. Follow the diagram imprinted on the back of the radio near the battery compartment. With the radio face down and the battery compartment toward you:

- The flat ends (-) of the bottom batteries go toward the left.
- The flat ends (-) of the top batteries go toward the right.

AC ADAPTOR USE

The Grundig adaptor supplied with this product is only for use in the Americas, where household AC voltage is 110-120 volts AC. Do not use this adaptor in countries with household AC voltage of 220-240 volts AC.

USING YOUR GRUNDIG AC ADAPTOR

1. Plug the adaptor into a household outlet.
2. Insert plug into the radio's DC 9 V socket.

NOTE: when using the adaptor, it is OK to leave batteries in the radio.

HOW TO USE THE INCLUDED "REEL" ANTENNA AND THE EXTERNAL ANTENNA SOCKET (left side of the radio)

The **SW EXT. ANT.** Socket is for shortwave antennas. Use it with the included "reel" antenna. Always fully unroll the "reel" antenna and place it as high off the floor as possible, next to the windows.

PROFESSIONALLY ENGINEERED ANTENNAS

Professionally engineered, outdoor shortwave antennas, available through specialized retailers, can also be used. Use the **SW. EXT. ANT**. Socket mentioned above. The socket is a 1/8 inch mono socket, used in conjunction with a 1/8 inch mono plug, such as the plugs often used for mono earphones. If you would like advice about shortwave antennas, please call Grundig technical support at 1-800-872-2228 for U.S. and 1-800-637-1648 for Canada.

HOW TO TURN THE RADIO ON AND OFF

Press the **ON/OFF** button.

HOW TO LISTEN TO YOUR LOCAL AM STATIONS

1. On the YB 400PE, the AM broadcast band is called medium wave. When you are listening to AM, the letters "MW" appear in the display.
2. Press the ON/OFF button to turn the radio on.
3. Press the AM button several times, until MW appears near the center of the display.
4. If "STEP" appears in the display, press the **STEP** button to choose 10 KHz tuning rate.
5. Automatically tune using the **AUTO TUNING** button. The radio will automatically stop on stations. A quick press-and-release tunes up-frequency; a long press-and-release tunes down-frequency.
6. Manually tune using the **tuning** button.

HOW TO USE THYE WIDE/NARROW SWITCH (left side of radio)

Experiment with this switch and let your ears be your guide. **WIDE** gives the best audio fidelity; **NARROW** best minimizes interference from other nearby stations. This switch is used for AM, shortwave, and longwave listening.

HOW TO LISTEN TO YOUR LOCAL FM STATIONS

1. Press the **FM** Button.
2. Automatically tune using the **AUTO TUNING** button. The radio will automatically stop on stations. A quick press-and-release tunes up-frequency; a long press-and-release tunes down-frequency.
3. Manually tune using the **TUNING BUTTONS**.

HOW TO USE THE STEREO/MONO SWITCH (left side of radio).

For true stereo reproduction in FM, select **STEREO** when you use earphones or headphones. When STEREO is selected, and the broadcast is in stereo, two circles appear above and to the right of the frequency in the display. Use the **MONO** position whenver reception is poor or marginal.

HOW TO USE THE TONE SWITCH

Experiment and let your ears judge which position, HIGH or LOW, you like best.

DIRECT FREQUENCY ENTRY

If you know the exact frequency of the station you want to hear, directly enter it using the keypad and *immediately* press the **FREQU./METER** BUTTON. Pressing the FREQU./METER button finalizes the entry. *Be sure to include the decimal point in FM frequencies*. Any kind of frequency may be entered regardless of what kind of frequyency you are presently tuned to, e.g. you can enter an FM frequency even if you are presently in shortwave.

AM STATION EXAMPLE: to tune the frequency 810 kilohertz in the AM band, press 8 1 0 , then press the **FREQU./METER** button.

FM STATION EXAMPLE: to tune the frequency 105.7 megahertz in the FM band, press 1 0 5 . 7, then press the **FREQU./METER** button. *Be sure to include the decimal point in FM frequencies.*

SHORTWAVE STATION EXAMPLE: to tune the frequency 5975 kilohertz in the shortwave 49 meter band, press 5975 then the **FREQU./METER** button.

HOW TO USE THE STEP BUTTON

In AM (MW), SW, and LW (see below), the **STEP** button provides selection of the best tuning steps, in kilohertz. This button is not functional in FM. The tuning step rate is indicated in the lower right of the display, e.g. "STEP 5". Use these guidelines:

AM (MW): 10 KHz in the Americas; 9 KHz outside of the Americas

LW (longwave): 9 KHz for broadcast stations. Note: You will probably not hear any stations in the Americas, as LW is not used for broadcast stations. It is used in Europe and other parts of the world for broadcasts to those areas.

SSB: 1KHz

HOW TO USE THE LOCK BUTTON

When lock is on, the word LOCK appears in the upper right area of the display. Using this feature has no effect on alarm functions.

When the radio is on: Pressing the **LOCK** button locks all keys except the **ON/OFF** button and the **SNOOZE** button.

When the radio is off: Pressing the **LOCK** button locks all keys. This will keep the radio from accidentally turning on when packed in a briefcase, etc. When you want to listen to your radio, press **LOCK** and then the **ON/OFF** switch.

HOW TO USE THE AM BUTTON'S LAST STATION MEMORY FEATURE

Pressing the **AM** button over and over steps through the last station tuned in MW, SW and LW.

HOW TO USE THE VOLUME CONTROL KNOB

Use this to control the loudness of the radio.

HOW AND WHEN TO USE THE RESET FEATURE

If the radio operates erratically, gently poke an opened paper clip into the **RESET** hole on the front of the radio. Normal operation may be restored. Note that this procedure erases all memories and resets the clock

HOW TO LISTEN TO SHORTWAVE STATIONS

If you already know the specific frequency of a shortwave station, enter it, using the direct frequency entry technique described earlier. For a complete list of shortwave frequencies, use the major shortwave publications mentioned on page 22.

Even if you do not know any specific frequencies of short-wave stations, you can find them by going into a shortwave band and tuning around, as described below.

WHAT IS A SHORTWAVE BAND

If you have ever listened to AM or FM radio, then you already know what a band is. The AM band is 530-1600 KHz; the FM band is 88-108 MHz. A band is simply a frequency range where stations are located. When you look for stations in these “bands”, you simply tune around until you find a station you like. Short-wave is similar, and the shortwave bands have names like 25 meters, 31 meters, 49 meters, etc. These are abbreviated 25m, 31m and 49m. Just like in AM and FM radio, one simply gets into the shortwave band and tunes around, looking for stations.

For example, the 19 meter shortwave band encompasses the frequency range of 15100 to 15600 kilohertz. **The band chart on the back of the YB400PE shows the frequency range for each band.**

HOW TO ENTER A SHORTWAVE BAND

EXAMPLE: To enter the 25 meter band

1. Press 2 5
2. Press the **FREQU./METER** button.

HOW TO TUNE AROUND IN A SHORTWAVE BAND

AUTO TUNING: The radio will find stations for you within the shortwave band you have entered. In shortwave, this feature only works within the shortwave bands shown on the back of the radio (see the chart titled “SHORTWAVE BAND AUTO TUNING RANGES”).

MANUAL TUNING: Use the regular TUNING buttons to go up or down frequency. Be aware that when using manual tuning, it is possible to tune right out of the shortwave band you have entered. You are in the band as long as the band's number, e.g. 25m, is in the display.

HOW TO CHOOSE THE BEST SHORTWAVE BAND TO TUNE AROUND IN

This information and much more can be found in the section titled MORE INFORMATION ABOUT SHORTWAVE.

SHORTWAVE BAND AUTO TUNING RANGES:

90m: 3200-3400 KHz	22m: 13600-13800 KHz
80m: 3500-3800 KHz	20m: 14000-14350 KHz
75m: 3900-4000 KHz	19m: 15100-15600 KHz
60m: 4750-5060 KHz	17m: 18065-18170 KHz
49m: 5950-6200 KHz	16m: 17550-17900 KHz
41m: 7100-7300 KHz	15m: 21000-21449 KHz
40m: 7000-7099 KHz	13m: 21450-21850 KHz
31m: 9500-9900 KHz	12m: 24890-24990 KHz
30m: 10100-10150 KHz	11m: 25650-26100 KHz
25m: 11650-12050 KHz	10m: 28000-29700 KHz

STORING STATIONS INTO MEMORY

To store a station into memory, you must be tuned to that station. Then you must decide which of the 40 memories to store it into. Follow the easy steps outlined below.

HOW TO TELL WHICH MEMORIES ARE EMPTY

· To determine the next available memory, press the **FREE** button once. The memory number is shown in the lower right hand corner of the display.

· To see all availably memories, press the **FREE** button repeatedly. The empty memory numbers are shown in the lower right corner of the display.

HOW TO STORE A FREQUENCY INTO MEMORY

There are 40 memories. Here is a specific example. To store BBC's evening frequency to North America, 5975 kilohertz, into memory 32, do the following

1. Press 5975
2. **Immediately** press the **FREQU./METER** button
3. Press 3 2
4. **Immediately** press the **STORE** button. If the display flashes, it means that a frequency is already stored into this memory. To overwrite it, immediately press **STORE** again. If you do not want to overwrite it, start over and use a different memory.

HOW TO ACCESS WHAT YOU HAVE STORED INTO MEMORY

1. To access one specific memory, e.g. memory 25, press **2 5** then press either **MEMO** button
2. To review all filled memories, press either **MEMO** button repeatedly.
3. To scan filled memories, press either **MEMO** button for about one second, and then release it. Scan starts. To stop scan, press any button.

HOW TO ERASE THE CONTENTS OF A MEMORY

Enter the memory’s number e.g. **2 5** , then press **FREE** twice.

USING THE CLOCK, ALARM AND SLEEP TIMER FEATURES

This can be done with the radio on or off. The YB400PE's clock is a 24 hour clock only, e.g. 6'oclock in the morning will read as 6:00; 6 o'clock in the evening will read as 18:00. There are two clocks, TIME I and TIME II. Select one or the other by pressing the **TIME 1/2** button. TIME I or TIME II shows in the display at top center. Set the time using the examples below.

EXAMPLE 1: If it is 06:00 hours press 6 . 0 0, then immediately press the TIME 1/2 button.

EXAMPLE 2: If it is 15:32 hours press 1 5 . 3 2, then immediately press the TIME 1/2 button.

HOW TO SET THE ALARM CLOCK

The alarm time is shown in the upper left corner of the display, under "ON TIME," when the radio is off.

To set the alarm to activate at 6:30:

1. Press 6 . 3 0 (be sure to include the decimal point)
2. Immediately press and release the **ON TIME** button.
3. Select the alarm mode using the **AUTO button**.

HOW TO CONTROL THE ALARM CLOCK

· Press the **AUTO** button several times while looking at the upper left corner of the display.

· The "**musical note**" symbol wakes you to the radio playing the last station it was set to.

· The "**bell**" symbol wakes you to a beeper sound.

· When both symbols disappear and -:— appears, **THE ALARM IS DEACTIVATED.**

HOW TO USE THE ALARM CLOCK'S SNOOZE FEATURE (button on top of radio)

Once the alarm has activated, you can get 5 minutes more sleep by briefly pressing the **SNOOZE** button. You can repeat this as many times as you like. By pressing the **SNOOZE** button for more than 2 seconds, you can completely shut off the alarm.

HOW TO SET THE SLEEP TIMER

Press the SLEEP button over and over. Each press changes the amount of time the radio will play before shutting off automatically, 60 through 0 minutes.

HOW TO USE THE DIAL LIGHT (button on top of radio)

The LIGHT button causes the display to be illuminated. After 10 seconds, or when the LIGHT button is pressed again, the light will go out.

Listed below are the characteristics of the major shortwave bands. Follow these guidelines for best listening results. Because shortwave signals depend on such factors as the sun, the ionosphere and the earth itself, signals cannot be heard on all bands throughout the day. Some bands are best during the daylight hours, and some are best at night. If the term "band" is new to you, please read the section titled, "WHAT IS A SHORTAVE BAND?" on page 9.

DAYTIME LISTENING

Shortwave listening is generally at its poorest during the daylight hours of about 10 a.m. to 3 p.m. The major reason for this is that the broadcasters are not transmitting to North America at this time. They assume that we are all either at work or at school, and are not able to listen during the day. If you want to try daytime listening, use the guidelines below. You will have some success, but not nearly as good as during the late afternoon and evenings. The best bands are **BOLD.**

DAYBANDS	CHARACTERISTICS
13m	Results vary. Worth trying.
16m	Similar to 19m.
19m	The best daytime band.
22m	Similar to 19m (fewer stations).
25m	Best around sunrise/sunset.
31m	Similar to 25m.

EVENING/NIGHT LISTENING

This is the best time to listen, because the broadcasters are deliberately transmitting to North America. These bands may be extremely good around sunset and sunrise too. Best bands are BOLD.

NIGHT BANDS	CHARACTERISTICS
19m	Summer Months
22m	Summer Months
25m	Best two hours before/after sunrise/ sunset
31m	**Good all night everywhere**
41m	Good all night in Eastern North America; varies in Western North America
49m	**The best night band everywhere**

NOTE: Getting close to a window may substantially improve your reception.

The construction materials of some buildings simply do not let signals in very well. Signals penetrate wood frame buildings easiest, while concrete and brick buildings usually block signals. If you are in a building with one or more stories above you, signals can also be impaired in strength. In such a situation, position yourself, and especially the radio's antenna, as close to a window as possible while listening.

On the following page is a list of the shortwave bands used for international broadcasts and their corresponding frequencies. Since some radios show frequency in megahertz and some in kilohertz, both are shown here. The YB400PE shows shortwave frequencies in kilohertz.

BAND	MEGAHERTZ	KILOHERTZ
11m	25.67-26.10	25670-26100
13m	21.45-21.50	21450-21850
16m	17.55-17.90	17550-17900
19m	15.10-15.60	15100-15600
22m	13.60-13.80	13600-13800
25m	11.65-12.05	11650-12050
31m	9.500-9.900	9500-9900
41m	7.100-7.300	7100-7300
49m	5.950-6.200	5950-6200
60m	4.750-5.060	4750-5060
75m	3.900-4.000	3900-4000
90m	3.200-3.400	32003400
120m	2.300-2.490	2300-2490

WHAT IS HEARD ON SHORTWAVE RADIO?

· International foreign broadcasts, many targeting North America

· Long distance two-way amateur radio, maritime, and aeronautical communications

WHAT COUNTRIES ARE HEARD ON SHORTWAVE RADIO?

The next chart shows some of the countries targeting North America with their broadcasts. Unless otherwise noted, frequencies are for evening listening in North America. Other countries do not deliberately target North America, but can be heard anyway. Whether or not a country can be heard depends on many factors, including signal strength, your geographic location, and the condition of the earth's ionosphere. Frequencies in BOLD are mainly used for the country's native language broadcast.

Australia (Radio Australia): 9580, 9860,15365,17795

Austria (Radio Austria International): 6015, 9655

Canada (Radio Canada International): 5960, 6120, 9755

China (China Radio International): 9690, 9780, 11680, 11715, 11840

Cuba (Radio Habana): 6060, 6080, 6180, 9510, 9820

Ecuador (HCJB-voice of the Andes): 9745, 11925, 12005, 15140

France (Radio France International): **5920, 5945, 9790, 9800**

Germany (Deutsche Welle): 5960, 6040, 6045, **6075**, 6085, **6100**, 6120, 6145, 6185, 9515, 9565, 9535, 9640, **9545**, 9650, 9670, 9700, 9730, 9735, 11705, 11740, 11750, **11810**, 11865, **13780, 15275, 15410, 17810, 17860**

Holland (Radio Nederland) 6020, 6025, 6165, 9590, 9715, 9840, 9895, 11655

Japan (Radio Japan/NHK): 5960, 6025, 9610, 9680, 9725, 11885, 11895, 15230

Russia (Radio Moscow International): 7105, 7115, 7150, 7270, 9750, 9765, 11805, 11840, 12050, 15410, 15425

Taiwan (Voice of Free China): 5950, 9680, 11740, 11855, 15440

United Kingdom (BBC World Service)
Morning: 5965, 6195, 9515, 9740, 11750, 17840
Evening: 5975, 6175, 7325, 9590, 9640, 15260

For fully comprehensive listings of the broadcast schedules of all countries, see the broadcast guides recommended in the section titled SHORTWAVE GUIDES AND MAGAZINES on page 22.

IS THERE ENGLISH LANGUAGE PROGRAMMING?

Yes! Many major international broadcasters incorporate English programming.

WHAT IS THE PROGRAM CONTENT LIKE?

This can vary considerably from country to country; however, programming usually consists of world news, local news from the country of origin, news commentary, interview programs, culturally oriented programs, music oriented programs, and even political propaganda.

ARE THE SIGNALS CLEAR?

Often, but not always. Today's technology has greatly minimized the fading, static and interference that are natural aspects of international broadcast listening.

CAN I HEAR A SPECIFIC COUNTRY?

Yes, if that country is transmitting its signal specifically for listening in your part of the world. Otherwise, it may range from good to impossible.

IF A COUNTRY IS NOT TRANSMITTING ITS SIGNAL SPECIFICALLY FOR RECEPTION IN NORTH AMERICA, IS THERE ANY CHANCE OF RECEIVING IT?

Yes, with detailed research into broadcast time and frequency and patience, it is possible but never guaranteed. A professionally engineered outdoor antenna can make a major difference. Call Grundig technical support for advice on such antennas.

WHAT ELSE CAN AND CANNOT BE HEARD ON SHORTWAVE?

You can hear long distance two-way marine, aviation, and amateur radio (ham). To receive such communications, an advanced shortwave receiver with single sideband (SSB) capability must be used. The more advanced Grundig radios can do this. Local VHF/UHF air traffic, police, fire, ambulance, and weather services CANNOT be heard. For these, use a VHF/UHF scanner

CAN DISTANT AM/FM BROADCAST STATIONS BE RECEIVED?

FM is strictly for local stations. Daytime AM stations usually have a maximum distance of 50-100 miles. At night, AM broadcast signals can sometimes be heard over much greater distances, hundreds of miles away.

HOW IS IT THAT BROADCASTS FROM AROUND THE WORLD CAN BE HEARD ON A SHORTWAVE RADIO?

Shortwave radio can be heard around the world because of the earth's ionosphere. Think of the ionosphere as a cloud-like layer enshrouding the earth at an altitude of 140-250 kilometers (90-160) miles). It consists of electrons and ions, the density of which are governed by the sun and the earth's geomagnetic forces. Radio waves virtually bounce their way around the earth, bouncing off the ionoshpere, back down to earth, often repeating this process several times. The low angles at which this takes place enable the radio waves to travel great distances with each bounce. This whole process is called radio wave deflection and ionospheric propagation.

HOW CAN I DETERMINE IF AN OUTDOOR ANTENNA WILL HELP?

While inside your normal listening environment, tune in a relatively weak shortwave signal. Staying tuned to this signal, step outside and away from your building. If the signal strength increases significantly, an outdoor antenna will help considerably. If there is little or no improvement in signal strength, an outdoor antenna will help; however, the amount of improvement will depend on the type of antenna used. If you have questions about outdoor antennas, call Grundig technical support.

WHAT TIME STANDARD IS USED IN SHORTWAVE BROADCAST SCHEDULES?

Since there are many different time zones around the world, it would be impractical for shortwave broadcasters to give broadcast times for each separate time zone. To simplify matters, they list their broadcast schedules

in Coordinated Universal time (UTC), also known as Greenwich Mean Time (GMT), World Time and Zulu Time.

Just what is UTC? It is the time in Greenwich England with no correction for daylight savings time, and is always stated in 24 hour format. In North America, UTC is ahead of our local time, 5 hours EST, 6 hours CST, 7 hours MST, 8 hours PST; one hour less during the months of daylight savings time. So, if a broadcast starts at 20:00 hours UTC, this correlates to 15:00 hours (or 3PM) Eastern Standard Time, and 12:00 hours (Noon) Pacific Standard Time.

To determine Coordinated Universal Time, tune-in to a major station, such as BBC London, on the hour. If your shortwave radio tunes to the following frequencies, UTC can be heard each minute on station WWV in Fort Collins Colorado: 20000 KHz, 15000 KHz, 10000 KHz, 5000 KHz and 2500 KHz. Usually, during any time of the day, one or more of these frequencies can be received in North America. UTC can also be heard on the Canadian station CHU, at 3330 KHz, 7335 KHz, and 14670 KHz.

SHORTWAVE GUIDES AND MAGAZINES AVAILABLE IN BOOKSTORES

If you cannot find these publications locally, call our toll-free number. We will help you find them.

PASSPORT TO WORLD BAND RADIO,
International Broadcasting Services, Ltd., Box 300,
Penn's Park, Pennsylvania 18493. (EASIEST TO USE FOR BEGINNERS). Published annually in early September.

WORLD RADIO TV HANDBOOK
Billboard Publications, Inc., 1515 Broadway, New York, N.Y. 10036. Published annually in January.

MONITORING TIMES,
Grove Enterprises, Inc., 140 Dog Branch Road,
Brasstown North Carolina 28902.
Phone (704) 837-9200. Monthly Magazine.

POPULAR COMMUNICATIONS
CQ Communications, Inc., 76 North Broadway,
Hicksville, NY 11801-2953.
Phone (516) 681-2922. Monthly Magazine

COMPANIES SPECIALIZING IN SHORTWAVE RADIOS, ACCESSORIES, ANTENNAS, MAGAZINES, BOOKS, ETC.

Call Grundig for Information

High end shortwave radios, such as the Grundig YB400PE, have a feature called SSB, a highly efficient way of electronically processing transmitted and received signals for two-way communication. Examples of this are amateur radio (hams), maritime, and aeronautical communication. Either upper side band (USB) or lower side band (LSB) can be used.

Receiving SSB signals is not always easy. Since this is two-way communication, transmissions are often very short and sporadic. Also, most two-way communication uses relatively low power, 50 to 1000 watts. The amateur radio operators are easiest to find; the others can be very difficult. Signals are also affected by the eleven year sunspot cycle. Signals will be poor through 1996 then the signals will get continually better until peaking in 2002 when reception will be excellent. Overall, very good reception can be expected from about 1998-2005.

Finding SSB signals can be like seeking a "needle in a haystack", so be patient! The easiest place to find SSB communication is at night in the amateur band shown below at 3700-4000 KHz.

HOW TO TURN THE SSB FEATURE ON

1. Slide the **SSB** switch (right side of radio) to the ON position.
2. Use the **STEP** button to select 1 KHz tuning steps. "STEP 1" will display in the lower right of the display.
3. Put the **FINE TUNING** control knob (right side of the radio) in its center position.
4. Use the **FIND TUNING** control knob to fine tune signals.

Below are some selected frequency ranges on which SSB communication can be found. All frequencies are shown in Kilohertz.

AMATEUR RADIO

3700-4000, LSB, night.

7150-7300, LSB, night.

14150-14350, USB, day.

21150-21450, USB, day.

AERONAUTICAL (usually USB)

2850-3155
3400-3500
4650-4750
5480-5730
6525-6765
8815-9040
10005-10100
11175-11400
13200-13360
15010-15100
17900-18030
21870-22000
23200-23350

MARITIME (usually USB)

4063-4438
6200-6525
8195-8815
12230-13200
16360-17410
18780-18900
19680-19800
22000-22720
25070-25110

MARITIME SSB WEATHER FREQUENCIES
(kilohertz; USB; times in UTC/GMT

2670	U.S. Coast Guard
2863	Oakland, CA; 5,10,35,40 min past hr.
2863	Honolulu., HI; 24 hour
3485	New York, NY; 24 hour
4363	Ft. Lauderdale, FL; 0100,1300,2300
4387	Manahawkin, NJ, 1200, 2200
4402	Inverness, CA; 0000, 1200
4426	U.S. Coast Guard
4426	Virginia; 0400, 0530, 1000
5547	USB, Aeronautical
5733	CAN; Edmtn AB, each hr. + 20 MIN, 2300
1200	6501 U.S. Coast Guard
6501	Virginial 1130, 1600, 2200, 2330
6501	Virginial 0400, 0530, 1000
6604	New York, NY; 24 hour
6604	CAN; Gander NF; 25, 30, 50, 55 min past hour
6679	Oakland , CA; 5, 10, 35, 40 min. past hr.
6679	Honolulu, HI; 24 hr.
6753	CAN: Trenton On; each hr. + 30 min 2300-1200

6753	CAN: St. John's NF; each hr + 40 min
8722	Ft. Lauderdale, FL;0100, 1300, 2300
8749	Manahawkin, NJ; 1200-2200
8764	U.S. Coast Guard
8764	Virginia: 1130, 1600, 2200, 2330
8764	Virginia: 1730 UTC
8761	Virginia: 0400, 0530, 1000
8828	Oakland, CA; 5, 10, 35, 40 min past hr.
8828	Honolulu, HI; 24 hr.
8843	USB, Aeronautical
10051	New York, NY; 24 hr.
10051	CAN: Gander NF; 25, 30, 50, 55 min past hr.
12382	Oakland, CA; 5, 10, 35, 40 min past hr.
13083	Inverness, CA; 0000, 1200
13089	U.S. Coast Guard
13089	Virginia: 1130, 1600, 2200, 2330
13089	Virginia: 1730 UTC
13092	Ft. Lauderdale, FL;0100, 1300, 2300
13270	USB, Aeronautical

13270	New York, NY; 24 hr.
13270	CAN: Gander NF: 25, 30, 50, 55 min past hr.
13282	Honolulu, HI; 24 hr.
13300	USB, Aeronautical
13345	USB, Aeronautical
15035	CAN: Edmntn AB; each hr + 20 min, 2300-1200
15035	CAN: Trenton ON; each hr + 30 min, 1000-0100
15035	CAN: St. John's NF; each hr + 40 min 1200-2300
17242	Ft. Lauderdale, FL; 0100, 1300, 2300
17314	U.S. Coast Guard
22738	Ft. Lauderdale, FL; 0100, 1300, 2300

TIME STATIONS (not SSB)		
CHU time (Canada)	3330	Best at night
CHU time (Canada)	7335	Day/Night
CHU time (Canada)	14670	Best during daylight
WWV-time/weather (US)	2500	Best at night
WWV-time/weather (US)	5000	Best at night
WWV-time/weather (US)	10000	Day/Night
WWV-time/weather (US)	15000	Best during daylight
WWV-time/weather (US)	20000	Best during daylight

MARITIME TWO-WAY COMMUNICATION FREQUENCIES AND CHANNELS

(Frequencies in KHz; channels are in parantheses; usually USB)

Search and Rescue: 2182, 3023, 5680

Survival Craft: 8364

Distress: 4125, (4S) 6215 (6S), 8291 (8S), 12290 (12S), 16420 (16S)

DSC Distress (Digital Selective Calling): 2187.5, 4207.5, 6312, 8414.521, 16804.5

MSI Broadcasts (Marine Safety INfo, TRRY): 4210, 6314, 8416.5, 12579, 16806.5, 19680.5, 22376, 26100.5

Ship to Ship/Shore: 2065, 2079, 2096, 4146 (4A), 4149 (4B), 4417 (4C), 6224 (6A), 6227 (6B), 6230 (6C), 8294 (8A), 8297 (8B), 12353 (12A), 12356 (12B), 12359 (12C), 16428 (16A), 16531 (16B), 16534 (16C), 18840 (18A), 18843 (18B), 18884, 21159 (21B), 22162 (22C), 22165 (22D), 22168 (22E), 22171, 25115, 25118

AMATEUR RADIO MARITIME

3815	Caribbean
3930	Puerto Rico weather
3964	East Coast waterway net
3968	West Coast AM/PM marine nets
7233	Recreational vehicle service net
7237	Carribbean maritime mobile net
7238	Baja maritime West Coast net; 8AM
7264	East Coast Waterway Net
7294	AM/PM West Coast mariner's net; 8AM, 7PM
8294, 12359, 2100	UTC, weather
14313	24 hr. maritime mobile help; 8PM Hawaii net
14340	West Coast "Manana" net; 11AM
21402	PM maritime mobile nets; 3PM
28333	Gordon West net

GETTING MORE INFORMATION ABOUT SSB COMMUNICATION

Please contact Grundig by phone. We will guide you to resources such as companies with excellent catalogs full of shortwave accessories, including books on SSB communication. Among the accessories are a variety of professionally engineered shortwave antennas which will significantly improve signal strengths and reception.

MONTHLY MAGAZINES WITH SSB RELATED INFORMATION AND ARTICLES:

These magazines are available from bookstores and magazine displays.

MONITORING TIMES,
Grove Enterprises, Inc., 140 Dog Branch Road,
Brasstown North Carolina 28902.
Phone (704) 837-9200. Monthly Magazine.

POPULAR COMMUNICATIONS
CQ Communications, Inc., 76 North Broadway,
Hicksville, NY 11801-2953.
Phone (516) 681-2922. Monthly Magazine

BATTERY REQUIREMENTS

Six AA batteries (alkaline for best results)

AC ADAPTOR

Output of 9 volts DC, negative polarity (tip negative); 300 millampere current capability; coaxial plug outer diameter of 5.5 millimeter, inner diameter of 2.1 millimeter. NOTE: Using a plug tip diameter smaller than 5.5 millimeter may not cut off voltage to the battery compartment and can cause batteries to overheat, leak and destroy circuits. This will void the warranty.

EARPHONE/HEADSET SOCKET

Standard earphones/headphones with stereo plug, 3.5 millimeters or 1/8 inch.

EXTERNAL ANTENNA SOCKET:

3.5 millimeter or 1/8 mono plug.

TUNING STEPS

AM (MW):	1 KHz / 9 KHz / 10 KHz
FM:	50 KHz
SW:	1 KHz / 5 KHz
LW:	1 KHz / 9 KHz

INTERMEDIATE FREQUENCIES

FM:	10.7 MHz
AM (MW), SW, LW:	55.85 MHz, 455 KHz

AUDIO OUTPUT POWER:

600 milliwatts

FREQUENCY RANGES

AM (MW):	520-1710 KHz @ 10 KHz steps; 527-1606 KHz @ 9 KHz STEPS
FM:	87.5-108 MHz
LW:	144-351 KHz
SW:	1600-30000 KHz (1.6-30 MHz)

INDEX TO THE RADIO'S CONTROLS (batteries, switches & sockets).